

[46] FIGS. 17 and 18 are cross-sectional views cut along lines XVII-XVII and XVIII-XVIII of FIG 12C, respectively;

[47] FIGS. 19 and 20 are cross-sectional views cut along lines XIX-XIX and XX-XX of FIG. 12D, respectively; and

[48] FIGS. 21A to 21C and 22A-22C are cross-sectional views that illustrate a process according to a second embodiment of the invention for manufacturing a TFT array substrate for use in the liquid crystal display device.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[49] Reference will now be made in detail to the preferred embodiments of the present invention, example of which is illustrated in the accompanying drawings.

[50] FIGS. 12A to 12D are plan views and Figs. 13~~8~~^H-20 are cross-sectional views that relate to lines III-III and IV-IV of related art FIG. 2, and illustrate a process according to a first embodiment of the invention for manufacturing a TFT array substrate similar to related art Fig. 2 for use in the liquid crystal display device. In this description, the plan views of the preferred embodiment are similar to the conventional art described in FIGS. 2-3D.

[51] Figs. 12A, 13A-13C and 14A-14C show a first mask process, wherein a first metal layer 111 is formed at first on a substrate 100 by depositing a metallic material such as of tantalum (Ta), chrome (Cr),